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EB2 Marketing Plan Business Group Meeting

Beloit, WI
1/21/2004



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Agenda

- Market Analysis
 - Geographical Markets
 - Share Analysis (Product Line and Customer Analysis)
- Competitive Background Information
 - NZ Comparable Product Analysis
 - Marketing Strategies
 - Strengths/Weaknesses.
- GCOR/EBS Background Information
 - GCOR Comparable Product Analysis
 - Marketing Strategies
 - Strengths/Weaknesses
 - EB Product Line Product Analysis



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Agenda

- EB2 Product Marketing Plan
 - Production Description
 - Target Markets
 - Financial Analysis
 - Marketing/Sales Objectives and Strategies
 - Product Features and Benefits
 - Future Applications Plans and Focus
 - Trial Distribution (Part 1)
 - Trial Distribution (Part 2)
 - Potential Market Entry Scenarios
 - Market Entry Timing
 - IP and New Technology



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Market Analysis

- Geographical Markets - Current

Mostly US Fuel Ethanol Market. However emergence in Canada, Europe and Asia as well.



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Market Share Analysis by Segment

2002 Share Analysis by segment (Alpha, GA, etc.) Fuel Ethanol Market ONLY

2002 Product Group	GCOR Revenue (\$ MM)	Fuel EtOH Market - non captive (\$ MM)	GCOR Share	NZ Share
GA & Blends	21	30	70 %	30%
Alpha	5	19	28 %	72%
Protease	3	3	95 %	5%
Cellulase / xylanase	2	2	99 %	1%
TOTAL	31	54	58 %	42%



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Product Line Analysis

(i.e. Trends, sudden changes, Winners, Losers, Objectives) Fuel Ethanol Market ONLY

Current Bulk Description	2001 Actual	2002 Actual	2003 Actual + GDF	Variable Margin %	Total margin %
G-ZYME G995-40		\$104,723	\$31,364	(7.0)	(66.0)
G-ZYME G995-AT		\$517,276	50	66.0	48.0
G-ZYME G997		\$1,522,695	\$1,695,954	12.0	(38.0)
SPEZYME FRED	\$263,134	\$726,199	\$689,512	70.8	51.3
SPEZYME FRED-L	\$833,448	\$825,786	\$566,853	77.0	63.0
SPEZYME FRED-L Technical	\$527,260	\$187,931	\$54,236	84.0	77.0
SPEZYME HPA	\$28,800	\$589,567	\$1,971,248	72.0	59.0
Total	\$1,652,642	\$4,474,175	\$5,009,177	50.3	22.0

- GCOR had major market share 5 years ago (80-90% share). NZ introduced SC.
- GCOR market share dipped to 28% and would be lower if not for some long term contracts and relationships.
- Current GCOR product (FRED) and line extensions was initial winner for GCOR, but is not meeting viscosity requirements that SC does.
- G997 (EB B. stear alpha) could compete somewhat, but very expensive.
- We have been trying to convert G997 customers to FRED products. Some customers preferred buying SC than convert to FRED.

Objective: Introduce new AA products to improve contribution margin and establish price stability



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Customer Client Analysis

2003 Top 10 Fuel Ethanol Customers

	Current Ship Cust Headquarters Name	AOP	GDF WITH YTD ACTUALS
1	BROIN GROUP	\$7,901,542	\$9,842,013
2	ENZYME DEVELOPMENT CORPORATION	\$8,267,575	\$7,479,137
3	AVENTINE RENEWABLE ENERGY, INC.	\$2,975,895	\$3,711,793
4	NEW ENERGY CORPORATION	\$3,078,500	\$3,100,829
5	RENEWABLE PRODUCTS BUYING GROUP	\$3,388,281	\$2,844,774
6	CARGILL DOW LLC	\$699,942	\$1,466,756
7	AGP CORN PROCESSING INC.	\$1,385,600	\$1,128,539
8	CARGILL, INC.	\$691,897	\$953,909
9	UTICA ENERGY		\$645,219
10	ABENGOA BIOENERGY	\$900,138	\$451,880
	Total	\$29,289,370	\$31,624,848



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Competitive Analysis Novozymes (NZ)

NZ Alpha Products

- Main one is called Liquozyme or Termamyl SC
- Engineered from *B. stearothermophilus*
- Strength of approximately 6000-6500 A-10 Units
- Similar in activity to G997
- Engineered to eliminate the need for calcium
- Designed to operate at lower pH levels
- Quick and effective viscosity break in early stages of liquefaction.

Price

- Current price is \$2.65-3.60/kg
- Little/no competition. Can maintain relatively high price at some accounts.



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Competitive Analysis Novozymes (NZ) (con't)

Margins

- One could expect 60-80% gross margin due to lack of competition and years of manufacturing experience.

Target Markets

- Currently only seen in Fuel Ethanol Market.
- Could make into sweetener market, but would need regulatory permission to be granted in most countries.
- Have not seen entry into major sweetener markets yet.



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Competitive Analysis - Marketing Strategies Novozymes (NZ)

Current Products

- Introduced as alternative to conventional alphas.
- Touted as designed specifically for ethanol industry. Not a holdover from the sweetener industry.
- Currently developing a 2-3X activity product. Drivers are lower formulation and shipping costs.

Pricing Strategies

- Introduced with huge price erosion. Needed to get foot in the door.
- Dose rate was also 50% less than FRED type products.
- This allowed them to take most of the market (75-80% of non-captive market).
- They can maintain higher SC prices while coupling lower GA prices.
- Based on past behavior, price of SC could probably reduced significantly if there were serious competition.



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Competitive Analysis - Marketing Strategies Novozymes (NZ)

Distribution

- Have covered entire market, no matter what size.
- Mostly in bulk with some tote quantities.
- Main production plant is in Franklinton, NC
- Numerous warehouses in the Midwest.
- Sales/Tech services scattered throughout the country for maximum coverage.

Advertising

- Invested heavily in promoting SC.
- Print promotions at major trade shows.
- Web page and emails advertising strengths sent to customers.
- Sponsors nearly every ethanol related conference and tradeshow.



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Competitive Analysis - Marketing Strategies Novozymes (NZ)

Sales Promotions

- Implemented various 'buy one, get one' free promotions in order to get plant trials.
- Have linked SC to GA sales. Price concessions on SC if GA was part of the package.
- Can promote easily with no competition. Excellent word of mouth, essentially free promotion.



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Competitive Analysis - Strengths/Weaknesses Novozymes (NZ)

Strengths

- Invested heavily in 98-99 upon re-entry into ethanol market
- Introduced many new innovative products frequently.
- Perception of being a leader and innovator.
- Dominated AA market share.
- Sales/Tech service personnel outnumbers GCOR 3:1.
- Aligned with major engineering firm (ICM) which has more than 60% of new start-ups in the market. Will become market leader as a result of this partnership.
- May have leveraged huge margins from other markets into this one in order to gain marketshare.



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Competitive Analysis - Strengths/Weaknesses Novozymes (NZ)

Weaknesses

- Young, arrogant and cocky group. Some solids and well respected members.
- Limited technical abilities, but are growing quickly.
- Can tend to ignore customers once they have them.
- Driven by need to have dominant market share.
- Customers are crying for competition for SC. Excited to try new product.



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Internal GCOR Analysis

Alpha Products

- Main ones are called SPEZYME FRED, FRED-L, and HPA.
- Engineered from *B. licheniformis*.
- Strength of approximately 15,400 - 26,500 LU/g
- HPA has some added phytase.
- Engineered to eliminate the need for calcium
- Designed to operate at lower pH levels

Price

- FRED - Current price is \$1.60-1.80/kg
- FRED-L - Current price usually 15% lower due to activity difference, but can be as low as 0.95/kg (ADM)
- SPEZYME HPA - Current price is \$1.80-2.10/kg



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Internal GCOR Analysis

Margins

- In the 60-75% gross margin range, but do not compete technically with SC in most customer processes.

Target Markets

- FRED and FRED-L are currently seen in both the Fuel Ethanol and Sweetener Market.
- SPEZYME HPA is only used in Fuel Ethanol.



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Internal GCOR Analysis - Marketing Strategies

Current Products

- Introduced as a significant improvement over wild type enzymes.
- FRED-L dominated market for two years until SC entry.
- Try not to lose market share with these products.
- HPA was introduced in 2001-2 to combat inferior visc breaking performance. Non-Clarified product.
- Customers prefer clarified product.

Pricing Strategies

- Huge price erosion. In order to maintain share, we reduced our prices as well.
- Price could not overcome performance differences.
- Value per unit of AA has dropped approx 40% and share has dropped to 25%.



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Internal GCOR Analysis - Marketing Strategies

Distribution

- Mostly in bulk with some tote quantities.
- Most sales into contracted customers (Cargill)
- Main production plant is in Beloit, WI and Cedar Rapids, IA
- Sales/Tech services mostly in Beloit with some off-site sales people.

Advertising

- Had not run ads until recently
- 2003 launched new ads.
- Sponsorships of major tradeshows, etc.



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Internal GCOR Analysis - Marketing Strategies

Sales Promotions

- Implemented various 'buy one, get one' free promotions in order to get plant trials of SPEZYME HPA.
- Cannot put together package deals due to lack of competitive alpha.



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Internal GCOR Analysis - Strengths/Weaknesses

Strengths

- Great technical sales and service teams.
- Good relationships with key customers.
- Good performance of glucoamylase blend products.
- Solid manufacturing base.
- Good knowledge within R&D.
- Good political tie-ins with other sectors of this market (biomass).



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Internal GCOR Analysis - Strengths/Weaknesses

Weaknesses

- No introduction of new products in 5 years.
- Not enough manpower to cover growing market or launch new products.
- Lack of R&D, marketing, and applications research.
- Product development takes too long from conception to introduction.
- Not investing as much as our main competitor.



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EBS Alpha Product Line

B. stearothermophilus AA - wild type (G 997 / G 995):

- This technology was acquired during the EB acquisition and has, to some extent, been retained commercially in order to serve the needs of specific customers.
- The economics of this enzyme are extremely poor compared to our mainstream FRED type products and our competitor's (NZ) engineered *B. stearothermophilus AA*.
- These products are the root cause of our poor margin profile within this class of enzyme.

B. stearothermophilus AA - GM (UltrapHLo):

- This EB technology was subject to a patent infringement suit filed by NZ prior to our acquisition of EB. As a result the product was withdrawn from commerce and, post-acquisition, was partially replaced by SPEZYME FRED based technology in both FE and HFCS applications.
- Therefore, a significant gap in our AA portfolio for FE applications exists because of the withdrawal of this product.



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EBS Alpha Product Line

EBS Alpha revenue 2000-present

Sweeteners

	Year				
	2000	2001	2002	2003 FCST	2004 AOP
AA	\$1,944,216	\$486,202	\$477,296	\$262,408	\$293,736
UltrapHLo	\$635,256	\$926,714	\$0	\$0	\$0
Total	\$2,579,472	\$1,412,916	\$477,296	\$262,408	\$293,736

Fermentation Alcohol

	Year				
	2000	2001	2002	2003 FCST	2004 AOP
AA	\$3,402,165	\$1,796,481	\$2,275,985	\$1,638,313	\$219,825
UltrapHLo	\$261,631	\$2,710,331	\$0	\$0	\$0
Total	\$3,663,796	\$4,506,812	\$2,275,985	\$1,638,313	\$219,825

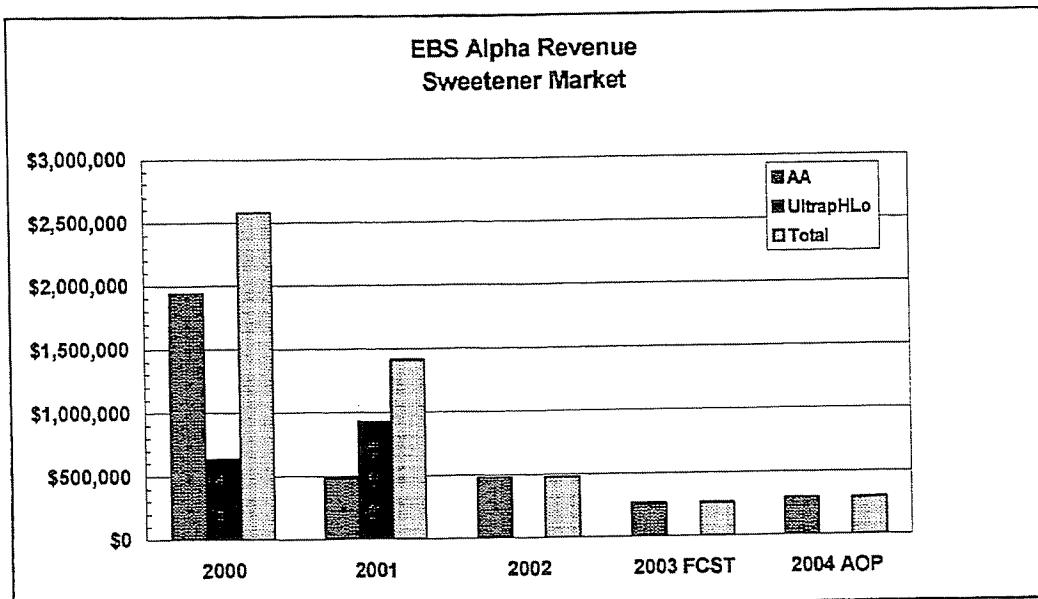
Note: AA labelled above is a mix of G995 and G997 series. Historical data is lumped into one category (AA).



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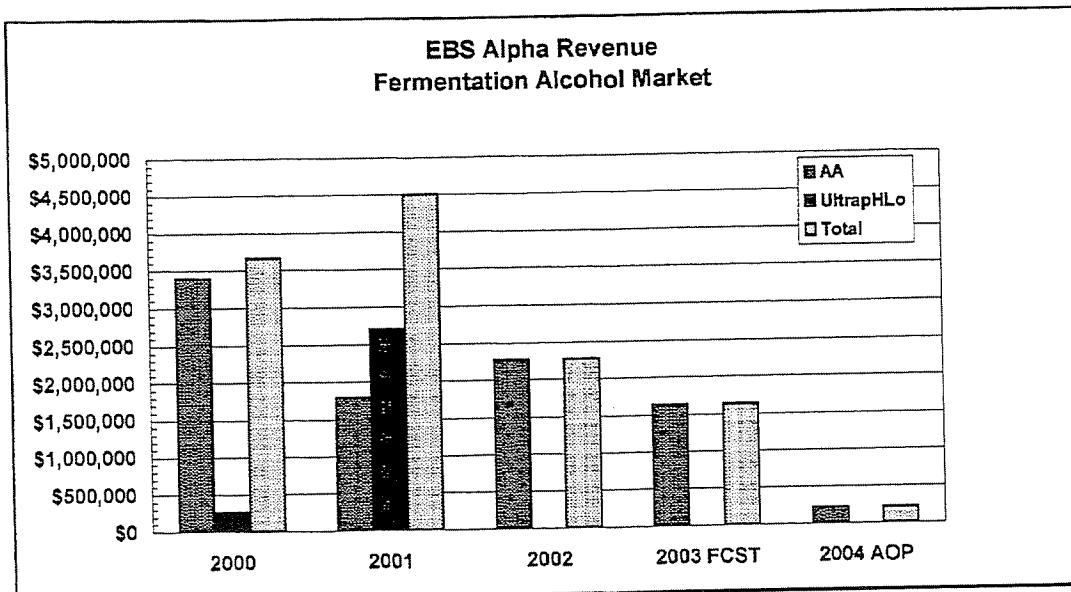
EBS Alpha Product Line



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EBS Alpha Product Line



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EBS Alpha Product Line

▪ Sales of UltrapHLo in 2002 in the sweeteners market were zero due to a provision in the GCOR supply contract with Corn Products (CPI). Existing UltrapHLo quantities were not counted as revenue in 2002, but the remaining inventory was given to CPI.

▪ After the stock of UltrapHLo was depleted, we successfully implemented a switch to more profitable FRED type products in the CPI plants.

• Sales of UltrapHLo to the ethanol industry stopped as of 2002 due to NZ's lawsuit against CPI. This lawsuit contended that UltrapHLo's genetic makeup violated Novozymes patent regarding *B. stear.* CPI did not want to fight this claim and GCOR decided to not pursue this enzyme and UltrapHLo was discontinued as a product and excluded in the sale of EB to GCOR.

After this product was discontinued in 2002, we tried to substitute the G995 or G997 series in place of the UltrapHLo at a number of plants, but the viscosity breaking characteristics were not quite as good as SC. There were not enough plants that could switch back to offset the losses to NZ with Termamyl SC.



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GCOR/EBS Alpha Product Line - Gross Margin

% Gross Margin (2001- present)

Enzyme	Year		
	2001	2002	2003 (Est)
G995 series	31.4	20.0	13.0
G997	30.3	(24.0)	(32.0)
UltrapHLo series	6.7	N/A	N/A
FRED	54.0	41.0	45.0
FRED-L	71.0	65.0	62.0
FRED-L Tech Grade	74.0	77.0	78.0
GC 262 (SPEZYME HPA)	45.0	62.0	59.0

Analysis:

- Gross margins for EB products shifted downward. SC introduction reduced prices dramatically.
- EB had to decrease prices as well. Reduced margins.
- GCOR has relatively high margins, but little revenue due to performance differences.
- Midwest Grain Products arrangement had artificially inflated G997 prices that were cut in half in 2002. Sharp decline in gross margin.



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Executive Summary (Background, etc.)

- Novozymes (NZ) continues to enjoy a competitive advantage in the alpha amylase (AA) market. GCOR did not have comparable enzyme in terms of functionality. Easy market for NZ to maintain.
- GCOR share in AA market is 5 million dollars compared to NZ's at 14 million. Our share is mainly due to longer-term contracts with existing customers.
- Functionality of SPEZYME FRED and SPEZYME HPA does not compete with SC. Viscosity breaking characteristics are not as good.
- Customers expect GCOR as a leader in enzymes to deliver this technology and compete with NZ.
- GCOR acquired *B. stearothermophilus* technology from EB acquisition. Needed to make financially attractive; R&D built an improved construct.
- R&D delivers samples of EB2 in December 2003 for testing. Have improved economics by expressing in *B. licheniformis*.



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EB2 Product Marketing Plan



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Product Description

B. stearothermophilus AA - GM (EB2):

This technology was acquired during the EB acquisition and represents an alternate construct to the original EB UltrapHLo for which we have determined Freedom to Operate. This is the focus of our current product development program, whereby we attempt to create a manufacturing host and protocol that yields the required economics with which we may compete.



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Geographical Markets

- Mostly US Fuel Ethanol Market.
- However emergence in Canada, Europe and Asia as well.
- Small quantities into sweeteners market. Could be introduced into customers that have used this product in the past (CPI)
- Significant value added markets (Global).



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